

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY


(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 10 NOV 2005

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Applicant's or agent's file reference 3339-01-WO	<b>FOR FURTHER ACTION</b>		See Form PCT/IPEA/416
International application No. PCT/US2004/022763	International filing date (day/month/year) 14.07.2004	Priority date (day/month/year) 18.07.2003	
International Patent Classification (IPC) or national classification and IPC C09D11/00			
Applicant THE LUBRIZOL CORPORATION et al.			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau) a total of 7 sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>			
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input checked="" type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>			
Date of submission of the demand  17.05.2005		Date of completion of this report  08.11.2005	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized Officer  Feldmann, G  Telephone No. +49 89 2399-8300	



# INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.  
PCT/US2004/022763

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## Box No. I Basis of the report

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1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
  - ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
    - ☐ international search (under Rules 12.3 and 23.1(b))
    - ☐ publication of the international application (under Rule 12.4)
    - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements**\* of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

### Description, Pages

1, 3, 6-16, 18-24	as originally filed
2, 17	received on 17.05.2005 with letter of 17.05.2005
4, 5	received on 02.09.2005 with letter of 02.09.2005

### Claims, Numbers

2(part), 3-9, 10(part), 13(part), 14, 15	as originally filed
1, 2(part), 10(part), 11(part)	received on 17.05.2005 with letter of 17.05.2005
11(part), 12, 13(part)	received on 02.09.2005 with letter of 02.09.2005

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
    - ☐ the description, pages
    - ☐ the claims, Nos.
    - ☐ the drawings, sheets/figs
    - ☐ the sequence listing (*specify*):
    - ☐ any table(s) related to sequence listing (*specify*):
  4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
    - ☐ the description, pages
    - ☐ the claims, Nos.
    - ☐ the drawings, sheets/figs
    - ☐ the sequence listing (*specify*):
    - ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

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**Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

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1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☐ claims Nos.

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (specify):

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☐ no international search report has been established for the said claims Nos.

☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:

the written form

☐ has not been furnished

☐ does not comply with the standard

the computer readable form

☐ has not been furnished

☐ does not comply with the standard

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions.

☒ See separate sheet for further details

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	1-15
	No: Claims	
Inventive step (IS)	Yes: Claims	1-15
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-15
	No: Claims	

2. Citations and explanations (Rule 70.7):

**see separate sheet**

**INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(SEPARATE SHEET)**

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1.) Additional observations:

In the present application polyamines or polyimines are claimed which are at least combined with the residue: RO-(Y)x-T-N-A-:

R,Y,x,T,N and A are defined as in present Cl.1 or on pp.1-2 of the description.

Furthermore, the amine or imine groups of the polyamine or polyimine may be reacted with further components in order to form oxide, urea or dibasic acid derivatives.

In originally filed Cl.12: the number of W-residues was defined as being "1-v".

In originally Cl.13 RO-(Y)x-T-N-A-(polyamine or polyimine) was claimed.

The formula of Cl.13 corresponds to the the formula 1 in originally filed Cl.1 having zero W groups.

The Search was made for originally filed Cls.12-15, considering the examples and the description supporting the claims.

From the wording on pp.1,2 and pp.4,5 of the description it is clear that by the term W(0-v) in originally filed independent Cls. 1, 10 and 11 not a negative integer can be meant (which would yield a meaningless formula), but the number of W-residues is meant which can be between zero and v (v = maximum number of available amino or imino groups). This understanding of (0-v) is explicitly expressed in Cls.1,2 (part),10 (part),11,12 and 13 (part) such as filed with applicant's letter dated 2.09.2005

Therefore, above Search encompasses as well Cls.1,2 (part),10(part),11,12 and 13 (part) such as filed with applicant's letter dated 2.09.2005 and dependent Cls. 2(part),3-9, 10(part), 13(part) such as originally filed.

2.) Assessment of novelty and inventive step:

The following documents are considered:

- D1: EP-A1-0 722 994 (LEXMARK INTERNATIONAL, INC) 24 July 1996 (1996-07-24)
- D2: US-A-4 645 611 (CAMPBELL ET AL) 24 February 1987 (1987-02-24)
- D3: US-B1-6 197 877 (THETFORD DEAN ET AL) 6 March 2001 (2001-03-06)

D4: EP-A2-0 905 207 (SEIKO EPSON CORPORATION) 31 March 1999 (1999-03-31)

The above documents disclose dispersants comprising units derived from polyamines or polyimines having diacids as pendant end groups (D1) or acid capped poly(caprolactone) (D2). Furthermore, polyamines with pending poly(caprolacton) chains are disclosed in (D3). In D4 pigment dispersants comprising PGA-polyethylenimine are disclosed.

None of the above documents disclosed a combination of units as presently claimed: e.g. the combination of group Q such as defined in present Cl.14 with units derived from a) a polyamine or polyimine and b) a diacid or anhydride thereof.

There was no indication in the cited prior art to solve the technical problem of providing further pigment dispersants by using combinations of the above disclosed units.

In Table 3 the applicant proved that the fluidity properties of a rather similar dispersant such as disclosed in the closest prior art D2 are less good than the fluidity properties provided by compositions comprising the presently claimed dispersant with organic media having very different polarities.

Therefore, novelty and inventive step can be acknowledged.